

**CLAIMS**

1. Method of preparing microcapsules containing at least one active ingredient comprising the application of a polymeric membrane containing at least one active ingredients and, optionally, at least one membrane additive to a core having  
5 dimensions ranging from 50 to 1200  $\mu\text{m}$  wherein said application is carried out by the process of coacervation by means of phase separation.
2. Method as claimed in claim 1 comprising the following steps:
  - (a) forming a solution of the coating polymer in an aqueous or in organic solvent;
  - (b) suspending the cores, the particles of active ingredient and, optionally, any  
10 membrane additive in the solution obtained in (a),
  - (c) causing coacervation of the coating polymer in the suspension obtained in (b) by means of phase separation,
  - (d) optionally, subjecting the microcapsules to a hardening treatment of the membrane.
  - 15 (e) recovering the microcapsules thereby obtained.
3. Method as claimed in claim 2 wherein step a) and b) are carried out as a single step.
4. Method as claimed in claims 1 to 3, wherein said polymer is insoluble in water.
- 20 5. Method as claimed in claim 4 wherein said polymer is ethylcellulose.
6. Method as claimed in claim 4 or 5 wherein the solvent used in step a) is cyclohexane.
7. Method as claimed in claim 4 to 6 wherein the additive added in step b) is selected from lactose, mannitol, polyvinylpyrrolidone,  
25 hydroxypropylmethylcellulose, methylcellulose, hydroxypropylcellulose, swelling agents such as sodium carboxymethylamide, croscarmellose, crospovidone, pregelatinized starch and pH modifiers
8. Method as claimed in claims 1 to 3, wherein said polymer is soluble in water.
9. Method as claimed in claim 8 wherein said polymer is selected from the group  
30 consisting of gelatine, cellulose acetate phthalate, hydroxypropylmethylcellulose phthalate or derivatives thereof.

10. Method as claimed in claim 8 or 9, wherein the solvent used in step a) is water at a pH comprised between 1 and 9.
11. Method as claimed in claim 10, wherein the pH is comprised between 4 and 7.
12. Method as claimed in claims 8 to 11, wherein the additive added in step b) is selected from dibasic calcium phosphate, calcium sulphate, barium sulphate, calcium carbonate, magnesium carbonate and silicates.
13. Method as claimed in claims 4 to 7, wherein in step c) phase separation takes place by variation in temperature.
14. Method as claimed in claim 8 to 12, wherein in step c) phase separation takes place by pH variation, variation in temperature or insolubilisation of the polymer by adding phase-separation inducing agents.
15. Microcapsules comprising a core having dimension ranging from 50 to 1200  $\mu\text{m}$  and a coating consisting of a polymeric membrane containing at least one active ingredient dispersed therein in the form of solid particles, wherein the polymer constituting the membrane is a water-soluble polymer and the particles of active ingredient are dispersed inside said polymeric membrane with a concentration that decreases progressively moving from the core towards the distal part of the membrane.
16. Microcapsules as claimed in claim 15 wherein the taste of the active principle is masked.
17. Microcapsules as claimed in claims 15 or 16 characterised by a modified release of the active principle.
18. Microcapsules as claimed in claim 17 wherein said modified release is a delayed release.
19. Microcapsules as claimed in claims 15 to 18, wherein the water-soluble polymer is chosen from gelatine, cellulose acetate phthalate, hydroxypropylmethylcellulose phthalate and derivatives thereof.
20. Microcapsule as claimed in claims 15 to 19, wherein said polymeric membrane further contains water-insoluble membrane additives.
21. Microcapsules constituted by a core having dimension ranging from 50 to 1200  $\mu\text{m}$  and coated with a polymeric membrane comprising one or more active

Ingredients homogeneously dispersed thereof in the form of solid particles, characterised in that the polymer constituting the membrane is a water-insoluble polymer.

22. Microcapsules as claimed in claims 21 characterised by a modified release  
5 of the active ingredient.
23. Microcapsules as claimed in claims 21 or 22, wherein the water-insoluble polymer is selected from ethylcellulose and its derivatives.
24. Microcapsules as claimed in claims 21 to 23, wherein the polymeric membrane further contains water-soluble additives.
- 10 25. Microcapsules as claimed in claims 15 to 24, wherein the active ingredient has dimensions ranging from 0.1 to 80  $\mu\text{m}$ , and ranges from 0.1 to 40% by weight of the microcapsules.
26. Microcapsules as claimed in claim 25, wherein the active ingredient has dimensions ranging from 1 to 30  $\mu\text{m}$ , and ranges from 0.2 to 21% by weight of the  
15 microcapsules.
27. Microcapsules as claimed in claims 15 to 26, wherein the core constitutes 50 to 95% by weight of the microcapsules and the coating polymer varies from 2 to 20% by weight of the microcapsule.
28. Microcapsules as claimed in claims 15 to 27, wherein the membrane contains additives having a mean diameter ranging from 0.1 to 80  $\mu\text{m}$  and constituting from  
20 2 to 10% by weight of the microcapsule.
29. Microcapsules as claimed in claim 28, wherein the membrane additives have a mean diameter ranging from 7 to 30  $\mu\text{m}$  and constitute from 3 to 5% by weight of the microcapsule.
- 25 30. Microcapsules as claimed in claims 15 to 29 coated with a further coating layer.